Star Trails

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TOOLS:

- Breadboard (1)
- Soldering iron (1)

PARTS:

- Arduino or clone (1)
- NPN Transistor (1)
- Resistor (1)
- Hook-up wire (1)
- Relay (1)
- DSLR camera (1)
- IR remote control for your camera (1)
- Tripod (1)

SUMMARY

Star trails are the paths left by stars as seen from the earth. As the earth spins, the stars appear to move and circle in the sky.

To capture the star trails you need a camera, a tripod and an automated trigger for your camera. The Arduino, a relay and the camera's remote control will create the automated trigger.

Step 1 — Star Trails
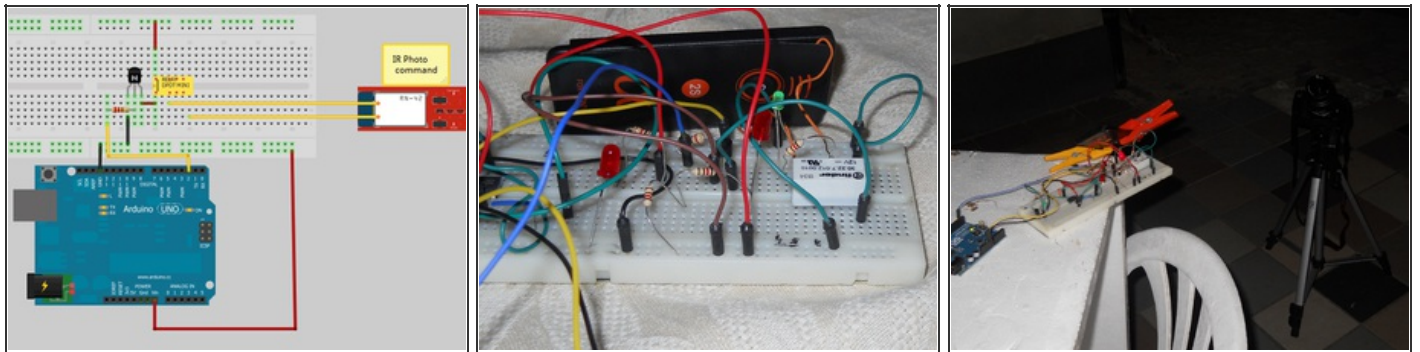
- Fritzing schematic.

- The system is powered by 12 volts. The transistor turns the relay on when pin 2 is set to HIGH.

- This fires the IR remote control that triggers the DSLR.

Step 2


```
/*
  Startrails
  Turns on Pino 2, every 60 secs.
  Connect the relay directly if its a 5volt relay or throught a
  npn transistor if is a 12 volt relay.
  12 volts --> Relay --> Collector --- Emmiter --->GND
                                  |
                            Base ---> Resistor ---> Arduino pino 2
 */
int Relay=2;
void setup() {
  // initialize the digital pin as an output.
  // Pin 13 has an LED connected on most Arduino boards:
  pinMode(Relay, OUTPUT);
}

void loop() {
  digitalWrite(Relay, LOW);    // set the LED on
  delay(60000);                // wait for a second
  digitalWrite(Relay, HIGH);   // set the LED off
  delay(100);                  // wait for a second
}
```

- The Arduino code can't be more simple. Just decide the time between photos and put that time after the command that sets pin 2 LOW.

- Remember that your DLSR must have time to take and process the photos. If you set your camera to a 10-second exposure you must have 25 to 200 seconds delay between exposures.

Step 3

- Peel back the adhesive paper on top of the DLSR remote control and solder two wires to the two pads under the button.
- Place the adhesive paper back in place.
- Connect the two wires to the contacts of your relay.

Step 4
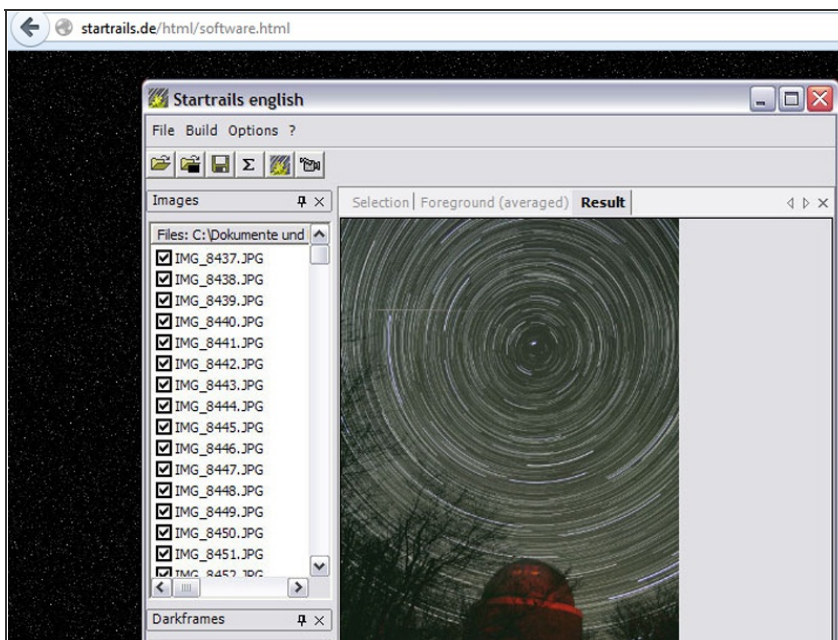
- Finally, go to startrails.de or markus-ensweiler.de. There you can download the software which will merge your individual photos together and create star trail photos like this one.

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